

The Aggregate Expenditures Model

This chapter develops the first macroeconomic model of the economy presented in the textbook—the **aggregate expenditures model**. You will find out what determines the demand for real domestic output (real GDP) and how an economy achieves an equilibrium level of output. The chapter begins with some history and simplifying assumptions for the model. As you will learn, one of the main assumptions is that the prices are fixed.

The chapter then explains how the investment decisions of individual firms can be used to construct an **investment schedule**. The investment schedule is then combined with the consumption schedule to form an aggregate expenditures schedule that shows the various amounts that will be spent in a private closed economy at each possible output or income level. These aggregate expenditures in tabular or graphical form can be used to find **equilibrium GDP** for this economy. It will be important for you to understand how equilibrium GDP is determined and why this level of output will be produced when you are given information about consumption and investment schedules.

Two other features of this simplified aggregate expenditures model are worth noting. Saving and *actual* investment are always equal because they are defined in exactly the same way: the output of the economy minus its consumption. **Saving and planned investment**, however, are equal only when real GDP is at its equilibrium level. When real GDP is *not* at its equilibrium level, saving and planned investment are *not* equal and there are **unplanned changes in inventories**. Equilibrium real GDP is achieved when saving and *planned* investment are equal and there are no unplanned changes in inventories.

From Chapter 28 you will also learn **what causes real GDP to rise and fall** based on changes or additions to aggregate expenditures. The first change that will be discussed is the effect of a change in investment spending on equilibrium real GDP in a closed private economy. The initial change in investment will increase equilibrium real GDP by more than the initial investment stimulus because of the multiplier effect.

The methods used to find the equilibrium real GDP in an open economy (one that exports and imports) is the same one as for a closed economy. The economy will tend to produce a real GDP that is equal to aggregate expenditures. The only difference is that now the aggregate expenditures include not only consumption and investment but also the **net exports** (exports minus imports). An increase in net exports, like an increase in investment,

will increase the equilibrium real GDP. A change in net exports also has a multiplier effect on real GDP just like a change in investment.

The section “Adding the Public Sector” introduces **government taxing and spending** into the analysis of equilibrium real GDP. Government purchases of goods and services add to aggregate expenditures; and taxation reduces the disposable income of consumers, thereby reducing both the amount of consumption and the amount of saving that will take place at any level of real GDP. You will need to know the level of real GDP that will be produced and why.

It is important to be aware that the equilibrium real GDP is not necessarily the real GDP at which full employment is achieved. Aggregate expenditures may be greater or less than the full-employment real GDP. If they are greater, there is an **inflationary expenditure gap**. If they are less, there exists a **recessionary expenditure gap**. The chapter explains how to measure the size of each expenditure gap: the amount by which the aggregate expenditures schedule must change to bring the economy to its full-employment real GDP. Several historical examples are given to help you see the application of recessionary and inflationary expenditure gaps.

The aggregate expenditures model is a valuable tool for explaining such economic events as recession, inflation, and economic growth.

■ CHECKLIST

When you have studied this chapter you should be able to

- ☐ Describe the history, assumptions, and simplifications underpinning the aggregate expenditures model.
- ☐ Construct an investment schedule showing the relationship between planned investment and GDP.
- ☐ Combine the consumption and investment schedule to form an aggregate expenditures schedule to explain the equilibrium levels of output, income, and employment in a private closed economy.
- ☐ Explain why the economy will tend to produce its equilibrium GDP rather than some smaller or larger level of real GDP.
- ☐ Illustrate graphically equilibrium in an aggregate expenditure model with consumption and investment components.
- ☐ Explain the relationship between saving and planned investment at equilibrium GDP.

- ☐ State the conditions for changes in inventories at equilibrium GDP.
- ☐ Discuss why equilibrium real GDP changes when the aggregate expenditure schedule shifts upward due to an increase in investment spending.
- ☐ Use the concept of net exports to define aggregate expenditures in an open economy.
- ☐ Describe the net export schedule and its relationship to real GDP.
- ☐ Explain what the equilibrium real GDP in an open economy will be when net exports are positive and when net exports are negative.
- ☐ Find the equilibrium real GDP in an open economy when given the tabular or graphical data.
- ☐ Give three examples of how circumstances or policies abroad can affect domestic GDP.
- ☐ List three simplifying assumptions used to add the public sector to the aggregate expenditures model.
- ☐ Find the equilibrium real GDP in an economy in which the government purchases goods and services when given the tabular or graphical data.
- ☐ Determine the effect on the equilibrium real GDP when lump-sum taxes are included in the aggregate expenditures model.
- ☐ Describe the conditions for leakages and injections and unplanned changes in inventories at the equilibrium level of GDP.
- ☐ Distinguish between the equilibrium real GDP and the full-employment real GDP.
- ☐ Explain the meaning of a recessionary gap and calculate one when you are provided with the relevant data.
- ☐ Present Keynes's solution to a recessionary expenditure gap.
- ☐ Define inflationary expenditure gap and calculate one when you are provided with the relevant data.
- ☐ Apply the concepts of recessionary and inflationary expenditure gaps to two historical events in the United States.
- ☐ Describe Say's law and Keynes's critique of it (Last Word).

■ CHAPTER OUTLINE

1. The development of the **aggregate expenditures model** occurred during the Great Depression when there were high unemployment and underutilized capital. Prices in such an economy were fixed or stuck (an extreme version of the sticky-price model already discussed in Chapter 23) because the oversupply of productive resources kept prices low. As a result, business had to make output and employment decisions based on unplanned changes in inventories arising from economic shocks.

a. The aggregate expenditures model with its constant price assumption is valuable for analysis of our modern economy because in many cases prices are sticky or stuck in the short run. The model can be useful for understanding how economic shocks affect output and employment when prices are fixed or sticky.

b. Two simplifications are made to begin the model construction. First, it is assumed that the economy is private

and closed, which means there is no international trade or government spending (or taxes). Second it is assumed that output or income measures are equal (real GDP = disposable income, DI). These simplifications are relaxed later in the chapter.

2. The investment decisions of businesses in an economy can be aggregated to form an **investment schedule** that shows the amounts business firms collectively intend to invest (their **planned investment**) at each possible level of GDP. An assumption is made that investment is independent of disposable income or real GDP.

3. In the aggregate expenditures model, the **equilibrium GDP** is the real GDP at which

- a. aggregate expenditures (consumption plus planned investment) equal real GDP, or $C + I_p = \text{GDP}$;
- b. in graphical terms, the aggregate expenditures schedule crosses the 45-degree line. The slope of this curve is equal to the marginal propensity to consume.

4. There are two other features of equilibrium GDP.

- a. The investment schedule indicates what investors plan to do. Actual investment consists of both planned and unplanned investment (unplanned changes in inventories). At above equilibrium levels of GDP, saving is greater than planned investment, and there will be unintended or unplanned investment through increases in inventories. At below equilibrium levels of GDP, planned investment is greater than saving, and there will be unintended or unplanned disinvestment through a decrease in inventories.
- b. Equilibrium is achieved when planned investment equals saving and there are no **unplanned changes in inventories**.

5. Changes in investment (or consumption) will cause the equilibrium real GDP to change in the same direction by an amount greater than the initial change in investment (or consumption). The reason for this greater change is due to the **multiplier effect**.

6. In an **open economy** there are **net exports** (X_n), which are defined as exports (X) minus imports (M).

- a. The equilibrium real GDP in an open economy means real GDP is equal to consumption plus investment plus net exports.
- b. The net export schedule will be positive or negative. The schedule is positive when exports are greater than imports; it is negative when imports are greater than exports.
- c. Any increase in X_n will increase the equilibrium real GDP with a multiplier effect. A decrease in X_n will do just the opposite.
- d. In an open economy model, circumstances and policies abroad can affect the real GDP in the United States.

(1) If there is an increase in real output and incomes in other nations that trade with the United States, then the United States can sell more goods abroad, which increases net exports, and thus increases real GDP. A decline in the real output or incomes of other trading nations has the opposite effects.

(2) High tariffs or strict quotas can have an adverse effect on net exports and thus reduce real GDP. Lower tariffs or eliminating quotas has the opposite effects.

(3) A depreciation in the value of the U.S. dollar will increase the purchasing power of foreign currency and this change will increase U.S. exports. The result is an increase in net exports and real GDP. An appreciation in the value of the U.S. dollar has the opposite effects.

7. Changes in **government spending and tax rates** can affect equilibrium real GDP. This simplified analysis assumes that government purchases do not affect investment or consumption, that taxes are purely personal taxes, and that a fixed amount of tax revenue is collected regardless of the level of GDP (a **lump-sum tax**).

a. **Government purchases** of goods and services add to the aggregate expenditures schedule and increase equilibrium real GDP; an increase in these purchases has a multiplier effect on equilibrium real GDP.

b. **Taxes** decrease consumption and the aggregate expenditures schedule by the amount of the tax times the **MPC**. They decrease saving by the amount of the tax times the **MPS**. An increase in taxes has a negative multiplier effect on the equilibrium real GDP.

(1) When government both taxes and purchases goods and services, the equilibrium GDP is the real GDP at which aggregate expenditures (*consumption + investment + net exports + government purchases of goods and services*) equals real GDP.

(2) From a **leakages** and **injections** perspective, the equilibrium GDP is the real GDP at which leakages (*saving + imports + taxes*) equals injections (*investment + exports + government purchases*).

(3) At equilibrium real GDP, there are no unplanned changes in inventories.

8. The **equilibrium level of real GDP** may turn out to be an equilibrium that is at less than full employment, at full employment, or at full employment with inflation.

a. If the equilibrium real GDP is less than the real GDP consistent with full-employment real GDP, there exists a **recessionary expenditure gap**. Aggregate expenditures are less than what is needed to achieve full-employment real GDP. The size of the recessionary expenditure gap equals the amount by which the aggregate expenditures schedule must increase (shift upward) to increase real GDP to its full-employment level.

(1) Keynes's solution to close a recessionary expenditure gap and achieve full-employment GDP was either to increase government spending or decrease taxes. An increase in government expenditures or a cut in taxes would work through the multiplier to lift aggregate expenditures. One caution about the price assumption, however, is worth noting. As an economy moves to its full-employment or potential GDP, prices should not be assumed to be stuck or sticky; and thus will rise because there is no longer a large supply of unemployed resources to restrain price increases. Such a flexible-prices condition will be analyzed in

the aggregate demand–aggregate supply model of the next chapter.

b. If aggregate expenditures are *greater* than those consistent with full-employment real GDP, then there is an **inflationary expenditure gap**. This expenditure gap results from excess spending and will increase the price level, creating demand-pull inflation. The size of the inflationary expenditure gap equals the amount by which the aggregate expenditures schedule must decrease (shift downward) if the economy is to achieve full-employment real GDP.

c. The U.S. recession of 2001 is an example of a recessionary expenditure gap as investment spending declined, thus reducing aggregate expenditures. Aggregate expenditures were insufficient to achieve a full-employment level of GDP.

d. The economy can achieve full-employment output with large negative net exports as it did in 2007. Although economic theory suggests that the large negative net exports should reduce equilibrium real GDP below its potential, this result did not occur in the U.S. economy because it was offset by additional consumption, investment, and government spending during that period.

9. (Last Word). Classical economists held the view that when there were deviations from full employment in the economy, it would eventually adjust and achieve equilibrium. This view was based on Say's law which says that supply creates its own demand. It implies that the production of goods will create the income needed to purchase the produced goods. The events of the Great Depression led to doubts about this law and it was challenged by John Maynard Keynes in his 1936 book, *General Theory of Employment, Interest, and Money*. Keynes showed that supply may not create its own demand because not all income need be spent in the period it was earned, thus creating conditions for high levels of unemployment and economic decline.

HINTS AND TIPS

1. Do not confuse the **investment demand curve** for the business sector with the **investment schedule** for an economy. The former shows the inverse relationship between the real interest rate and the amount of total investment by the business sector, whereas the latter shows the collective investment intentions of business firms at each possible level of disposable income or real GDP.

2. The distinction between **actual investment**, **planned investment**, and **unplanned investment** is important for determining the equilibrium level of real GDP. Actual investment includes both planned and unplanned investment. At any level of real GDP, saving and actual investment will always be equal by definition, but saving and planned investment may not equal real GDP because there may be unplanned investment (unplanned changes in inventories). Only at the equilibrium level of real GDP will saving and planned investment be equal (there is no unplanned investment).

3. There is an important difference between **equilibrium** and **full-employment real GDP** in the aggregate expenditures model. Equilibrium means no tendency for the economy to change its output (or employment) level. Thus, an economy can experience a low level of output and high unemployment and still be at equilibrium. The *recessionary expenditure gap* shows how much aggregate expenditures need to increase, so that when this increase is multiplied by the multiplier, it will shift the economy to a higher equilibrium and to the full-employment level of real GDP. Remember that you multiply the needed increase in aggregate expenditures (the recessionary expenditure gap) by the multiplier to calculate the change in real GDP that moves the economy from below to full-employment equilibrium.

■ IMPORTANT TERMS

planned investment	unplanned changes in
investment schedule	inventories
aggregate	net exports
expenditures	lump-sum tax
schedule	recessionary
equilibrium GDP	expenditure gap
leakage	inflationary
injection	expenditure gap

SELF-TEST

■ FILL-IN QUESTIONS

1. In the aggregate expenditures model, when total spending falls, then total output and employment (increase, decrease) _____, and when total spending rises, then total output and employment _____.

2. Some simplifying assumptions used in the first part of the chapter are that the economy is (an open, a closed) _____ economy, the economy is (private, public) _____, that real GDP equals disposable (consumption, income) _____, and that an increase in aggregate expenditures will (increase, decrease) _____ real output and employment, but not raise the price level.

3. A schedule showing the amounts business firms collectively intend to invest at each possible level of GDP is the (consumption, investment) _____ schedule. For this schedule, it is assumed that planned (saving, investment) _____ is independent of the level of current disposable income or real output.

4. Assuming a private and closed economy, the equilibrium level of real GDP is determined where aggregate expenditures are (greater than, less than, equal to) _____

plus investment is _____ real domestic output and the aggregate expenditures schedule or curve intersects the (90-degree, 45-degree) _____ line.

5. A leakage is (an addition to, a withdrawal from) _____ the income expenditure stream whereas an injection is _____ the income expenditure stream. In this chapter, an example of leakage is (investment, saving) _____, and an example of an injection is _____.

6. If aggregate expenditures are greater than the real domestic output, saving is (greater than, less than) _____ planned investment, there are _____ planned (increases, decreases) _____ in inventories, and real GDP will (rise, fall) _____.

7. If aggregate expenditures are less than the real domestic output, saving is (greater than, less than) _____ planned investment, there are unplanned (increases, decreases) _____ in inventories, and real GDP will (rise, fall) _____.

8. If aggregate expenditures are equal to the real domestic output, saving is (greater than, less than, equal to) _____ planned investment, unplanned changes in inventories are (negative, positive, zero) _____, and real GDP will neither rise nor fall.

9. An upshift in the aggregate expenditures schedule (increase, decrease) _____ the equilibrium GDP. The upshift in the aggregate expenditures schedule can result from (an increase, a decrease) _____ in the consumption schedule or _____ in investment schedule.

10. When investment spending increases, the equilibrium real GDP (increases, decreases) _____. When investment spending decreases, the equilibrium real GDP _____. The changes in the equilibrium real GDP are (greater, less) _____ than initial changes in investment spending because of (lump-sum tax, multiplier) _____.

11. In an open economy, a nation's net exports are equal to its exports (plus, minus) _____ its imports. In the open economy, aggregate expenditures are equal to consumption (plus, minus) _____ investment (plus, minus) _____ net exports.

12. What would be the effect, an increase (+) or decrease (−), of each of the following on an open economy's aggregate expenditures schedule?

- a. an increase in imports _____
- b. an increase in exports _____
- c. a decrease in imports _____
- d. a decrease in exports _____
- e. an increasing level of national income among trading partners _____
- f. an increase in trade barriers imposed by trading partners _____
- g. a depreciation in the value of the economy's currency _____

13. Increases in public spending will (decrease, increase) _____ the aggregate expenditures schedule and equilibrium real GDP; but decreases in public spending will _____ the aggregate expenditures schedule and equilibrium real GDP.

14. A tax yielding the same amount of tax revenue at each level of GDP is a (lump-sum, constant) _____ tax.

15. Taxes tend to reduce consumption at each level of real GDP by an amount equal to the taxes multiplied by the marginal propensity to (consume, save) _____; saving will decrease by an amount equal to the taxes multiplied by the marginal propensity to _____.

16. In an economy in which government both taxes and purchases goods and services, the equilibrium level of real GDP is the real GDP at which aggregate (output, expenditures) _____ equal(s) real domestic _____, and at which real GDP is equal to consumption (plus, minus) _____ investment (plus, minus) _____ net exports (plus, minus) _____ purchases of goods and services by government.

17. When the public sector is added to the model, the equation for the leakages and injections shows (consumption, investment) _____ plus (imports, exports) _____, plus purchases of goods and services by government equals (consumption, saving) _____ plus (exports, imports) _____ plus taxes.

18. A recessionary expenditure gap exists when equilibrium real GDP is (greater, less) _____ than the full-employment real GDP. To bring real GDP to the full-employment level, the aggregate expenditures schedule must (increase, decrease) _____ by an amount equal to the difference between the equilibrium

and the full-employment real GDP (multiplied, divided) _____ by the multiplier.

19. Keynes believed that prices during the Great Depression were (flexible, fixed) _____ because large amounts of productive resources in the economy were unemployed. In such conditions, he thought the government could increase real GDP to achieve full-employment without a rise in the price level by (increasing, decreasing) _____ government spending or _____ taxes.

20. The amount by which aggregate spending at the full-employment GDP exceeds the full-employment level of real GDP is (a recessionary, an inflationary) _____ expenditure gap. To eliminate this expenditure gap, the aggregate expenditures schedule must (increase, decrease) _____.

TRUE-FALSE QUESTIONS

Circle T if the statement is true, F if it is false.

1. The basic premise of the aggregate expenditures model is that the amount of goods and services produced and the level of employment depend directly on the level of total spending. T F

2. In the aggregate expenditures model of the economy, the price level is assumed to be fixed or stuck. T F

3. The investment schedule is a schedule of planned investment rather than a schedule of actual investment. T F

4. The equilibrium level of GDP is that GDP level corresponding to the intersection of the aggregate expenditures schedule with the 45-degree line. T F

5. At levels of GDP below equilibrium, the economy wants to spend at higher levels than the levels of GDP the economy is producing. T F

6. At levels of GDP below equilibrium, aggregate expenditures are less than GDP, which causes inventories to rise and production to fall. T F

7. Saving is an injection into and investment is a leakage from the income expenditures stream. T F

8. Saving and actual investment are always equal. T F

9. Saving at any level of real GDP equals planned investment plus unplanned changes in inventories. T F

10. The equilibrium level of GDP will change in response to changes in the investment schedule or the consumption schedule. T F

11. If there is a decrease in the investment schedule, there will be an upshift in the aggregate expenditures schedule. T F

12. Through the multiplier effect, an initial change in investment spending can cause a magnified change in domestic output and income. T F

13. The net exports of an economy equal the sum of its exports and imports of goods and services. T F

14. An increase in the volume of a nation's exports, other things being equal, will expand the nation's real GDP. T F

15. An increase in the imports of a nation will increase the exports of other nations. T F

16. A falling level of real output and income among U.S. trading partners enables the United States to sell more goods abroad. T F

17. An appreciation of the dollar will increase net exports. T F

18. If the MPS were 0.3 and taxes were levied by the government so that consumers paid \$20 in taxes at each level of real GDP, consumption expenditures at each level of real GDP would be \$14 less. T F

19. Equal changes in government spending and taxes do not have equivalent effects on real GDP. T F

20. At equilibrium, the sum of leakages equals the sum of injections. T F

21. The equilibrium real GDP is the real GDP at which there is full employment in the economy. T F

22. The existence of a recessionary expenditure gap in the economy is characterized by the full employment of labor. T F

23. Keynes's solution to the recessionary expenditure gap of the Great Depression was to increase government spending and cut taxes. T F

24. The closer an economy is to its full-employment level of output, the less likely it is that any increase in aggregate expenditures will lead to inflation rather than an increase in real GDP. T F

25. An inflationary expenditure gap is the amount by which the economy's aggregate expenditures schedule must shift downward to eliminate demand-pull inflation and still achieve the full-employment GDP. T F

■ MULTIPLE-CHOICE QUESTIONS

Circle the letter that corresponds to the best answer.

- (c) disposable income
- (d) investment spending

Question 3 is based on the following consumption schedule.

Real GDP	C
\$200	\$200
240	228
280	256
320	284
360	312
400	340
440	368
480	396

3. If the investment schedule is \$60 at each level of output, the equilibrium level of real GDP will be

- (a) \$320
- (b) \$360
- (c) \$400
- (d) \$440

4. If real GDP is \$275 billion, consumption is \$250 billion, and investment is \$30 billion, real GDP

- (a) will tend to decrease
- (b) will tend to increase
- (c) will tend to remain constant
- (d) equals aggregate expenditures

5. On a graph, the equilibrium real GDP is found at the intersection of the 45-degree line and the

- (a) saving curve
- (b) consumption curve
- (c) investment demand curve
- (d) aggregate expenditures curve

6. Which is an injection of spending into the income expenditures stream?

- (a) investment
- (b) imports
- (c) saving
- (d) taxes

7. When the economy's real GDP exceeds its equilibrium real GDP,

- (a) leakages equal injections
- (b) planned investment exceeds saving
- (c) there is unplanned investment in the economy
- (d) aggregate expenditures exceed the real domestic

- (c) saving is greater than planned investment
 (d) saving is less than planned investment

Answer Questions 10 and 11 on the basis of the following table for a private, closed economy. All figures are in billions of dollars.

Real rate of return	Investment	Consumption	GDP
10%	\$ 0	\$200	\$200
8	50	250	300
6	100	300	400
4	150	350	500
2	200	400	600
0	250	450	700

10. If the real rate of interest is 4%, then the equilibrium level of GDP will be

- (a) \$300 billion
 (b) \$400 billion
 (c) \$500 billion
 (d) \$600 billion

11. An increase in the real interest rate by 4% will

- (a) increase the equilibrium level of GDP by \$200 billion
 (b) decrease the equilibrium level of GDP by \$200 billion
 (c) decrease the equilibrium level of GDP by \$100 billion
 (d) increase the equilibrium level of GDP by \$100 billion

12. Compared with a closed economy, aggregate expenditures and GDP will

- (a) increase when net exports are positive
 (b) decrease when net exports are positive
 (c) increase when net exports are negative
 (d) decrease when net exports are zero

Use the data in the following table to answer Questions 13 and 14.

Real GDP	$C + I_g$	Net exports
900	\$ 913	\$3
920	929	3
940	945	3
960	961	3
980	977	3
1000	993	3
1020	1009	3

13. The equilibrium real GDP in this open economy is

- (a) \$960
 (b) \$980
 (c) \$1000
 (d) \$1020

14. If net exports are increased by \$4 billion at each level of GDP, the equilibrium real GDP would be

- (a) \$960
 (b) \$980
 (c) \$1000
 (d) \$1020

15. An increase in the real GDP of an economy will, other things remaining constant,

- (a) increase its imports and the real GDPs in other economies
 (b) decrease its imports and the real GDPs in other economies
 (c) increase its imports and decrease the real GDPs in other economies
 (d) decrease its imports and increase the real GDPs in other economies

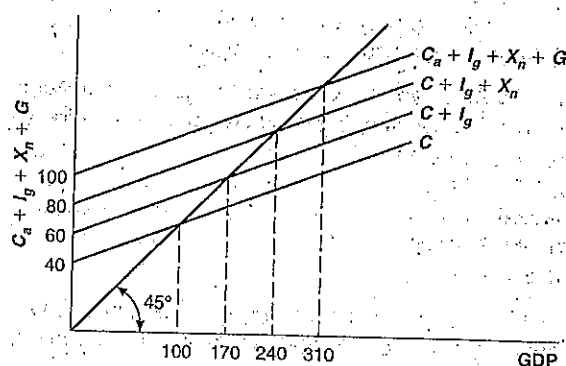
16. Other things remaining constant, which would increase an economy's real GDP and employment?

- (a) an increase in the exchange rate for foreign currencies
 (b) the imposition of tariffs on goods imported from abroad
 (c) an appreciation of the dollar relative to foreign currencies
 (d) an increase in the level of national income among the trading partners for this economy

17. The economy is operating at the full-employment level of output. A depreciation of the dollar will most likely result in

- (a) a decrease in exports
 (b) an increase in imports
 (c) a decrease in real GDP
 (d) an increase in the price level

Answer Questions 18 and 19 on the basis of the following diagram.



18. If this were an open economy without a government sector, the level of GDP would be

- (a) \$100
 (b) \$170
 (c) \$240
 (d) \$310

19. In this graph it is assumed that investment, net exports, and government expenditures

- (a) vary directly with GDP
 (b) vary inversely with GDP
 (c) are independent of GDP
 (d) are all negative

Questions 20 and 21 are based on the following consumption schedule.

Real GDP	C
\$300	\$290
310	298
320	306
330	314
340	322
350	330
360	338

20. If taxes were zero, government purchases of goods and services \$10, planned investment \$6, and net exports zero, equilibrium real GDP would be

- (a) \$310
- (b) \$320
- (c) \$330
- (d) \$340

21. If taxes were \$5, government purchases of goods and services \$10, planned investment \$6, and net exports zero, equilibrium real GDP would be

- (a) \$300
- (b) \$310
- (c) \$320
- (d) \$330

22. The amount by which an economy's aggregate expenditures must shift upward to achieve full-employment GDP is

- (a) an injection
- (b) a lump-sum tax
- (c) a recessionary expenditure gap
- (d) an unplanned change in inventories

23. If the MPC in an economy is 0.75, government could eliminate a recessionary expenditure gap of \$50 billion by decreasing taxes by

- (a) \$33.3 billion
- (b) \$50 billion
- (c) \$66.7 billion
- (d) \$80 billion

24. To eliminate an inflationary expenditure gap of \$50 in an economy in which the marginal propensity to save is 0.1, it will be necessary to

- (a) decrease the aggregate expenditures schedule by \$50
- (b) decrease the aggregate expenditures schedule by \$5
- (c) increase the aggregate expenditures schedule by \$50
- (d) increase the aggregate expenditures schedule by \$5

25. A major limitation of the aggregate expenditures model is that it

- (a) gives more weight to cost-push than demand-pull inflation
- (b) makes a false distinction between planned and unplanned investment

(c) assumes that prices are stuck or inflexible even if the economy moves near potential GDP

(d) explains recessionary expenditure gaps but not inflationary expenditure gaps

PROBLEMS

1. Following are two schedules showing several G and the level of investment spending (I) at each G . (All figures are in billions of dollars.)

Schedule number 1		Schedule number 2	
GDP	I	GDP	I
\$1850	\$90	\$1850	\$90
1900	90	1900	90
1950	90	1950	90
2000	90	2000	90
2050	90	2050	90
2100	90	2100	90
2150	95	2150	95

a. Each schedule is an _____ schedule.

b. When such a schedule is drawn up, it is assumed that the real rate of interest is _____.

c. In schedule

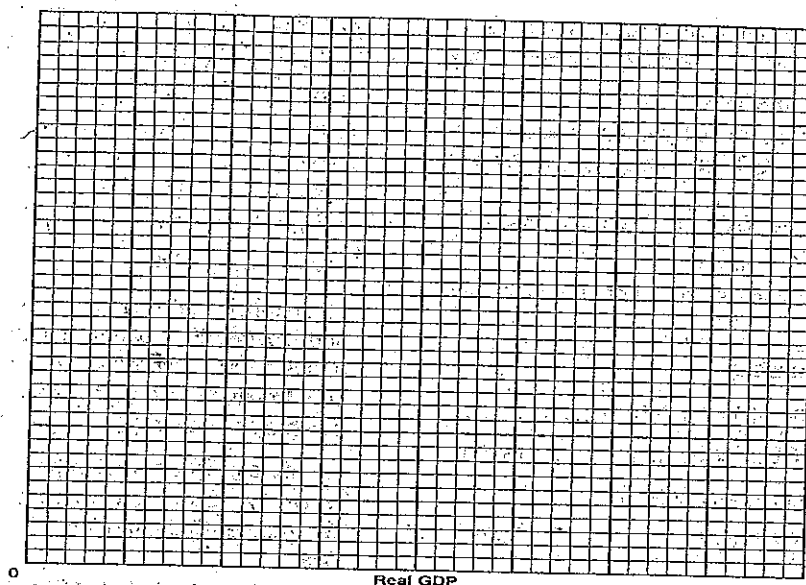
(1) number 1, G and I are (unrelated, directly related) _____.

(2) number 2, G and I are _____.

d. Should the real rate of interest rise, investment spending at each G would (increase, decrease) _____ and the curve relating G and investment spending would shift (upward, downward) _____.

2. The following table shows consumption and saving at various levels of real GDP. Assume the price level is constant, the economy is closed to international trade, there is no government, no business savings, no depreciation, and no net foreign factor income earned in the United States.

Real GDP	C	S	I_g	$C + I_g$
\$1300	\$1290	\$10	\$22	1312
1310	1298	12	22	1320
1320	1306	14	—	—
1330	1314	16	—	—
1340	1322	18	—	—
1350	1330	20	—	—
1360	1338	22	—	—
1370	1346	24	—	—
1380	1354	26	—	—
1390	1362	28	22	1384
1400	1370	30	22	1392



a. The next table is an investment demand schedule that shows the amounts investors plan to invest at different rates of interest. Assume the rate of interest is 6%. In the previous table, complete the gross investment, the consumption-plus-investment, and unplanned investment (UI) columns, showing unplanned increase in inventories with a + and unplanned decrease in inventories with a -.

Interest rate	I_g
\$10%	\$ 0
9	7
8	13
7	18
6	22
5	25

b. The equilibrium real GDP will be \$ _____.

c. The value of the marginal propensity to consume in this problem is _____, and the value of

the marginal propensity to save is _____.

d. The value of the simple multiplier is _____.

e. If the rate of interest should fall from 6% to 5%, investment would (increase, decrease) _____

by \$ _____; and the equilibrium real GDP would, as a result, (increase, decrease)

by \$ _____.

f. Suppose the rate of interest were to rise from 6% to 7%. Investment would (increase, decrease)

by \$ _____ and the equilibrium real GDP would _____ by \$ _____.

g. Assuming the rate of interest is 6%, on the graph at the top of this page, plot C , $C + I_g$, and the 45-degree line, and indicate the equilibrium real GDP.

3. The second column of the schedule below shows what aggregate expenditures (consumption plus investment) would be at various levels of real domestic product in a closed economy.

a. Were this economy to become an open economy, the volume of exports would be a constant \$90 billion (column 3), and the volume of imports would be a

(1) Possible levels of, real GDP (billions)	(2) Aggregate expenditures closed economy (billions)	(3) Exports (billions)	(4) Imports (billions)	(5) Net exports (billions)	(6) Aggregate expenditures, open economy (billions)
\$ 750	\$ 776	\$90	\$86	\$ _____	\$ _____
800	816	90	86	_____	_____
850	856	90	86	_____	_____
900	896	90	86	_____	_____
950	936	90	86	_____	_____
1000	976	90	86	_____	_____
1050	1016	90	86	_____	_____

constant \$86 billion (column 4). At each of the seven levels of real GDP (column 1), net exports would be \$ _____ billion (column 5).

b. Compute aggregate expenditures in this open economy at the seven real GDP levels and enter them in the table (column 6).

c. The equilibrium real GDP in this open economy would be _____ billion.

d. The value of the multiplier in this open economy is equal to _____.

e. A \$10 billion increase in

(1) exports would (increase, decrease) _____

the equilibrium real GDP by \$ _____ billion.

(2) imports would (increase, decrease) _____

the equilibrium real GDP by \$ _____ billion.

4. At the top of the next column are consumption schedules.

a. Assume government levies a lump-sum tax of \$100. Also assume that imports are \$5. Because the marginal propensity to consume in this problem is _____, the imposition of this tax will reduce consumption at all levels of real GDP by \$ _____. Complete the C_a column to show consumption at each real GDP after this tax has been levied.

Real GDP	C	C_a	$C + I_g + X_n + G$
\$1500	\$1250	\$ _____	\$ _____
1600	1340	_____	_____
1700	1430	_____	_____
1800	1520	_____	_____
1900	1610	_____	_____
2000	1700	_____	_____
2100	1790	_____	_____

b. Suppose that investment is \$150, exports are _____ and government purchases of goods and services equal \$200. Complete the (after-tax) consumption-plus-investment-plus-net-exports-plus-government-purchases column ($C_a + I_g + X_n + G$).

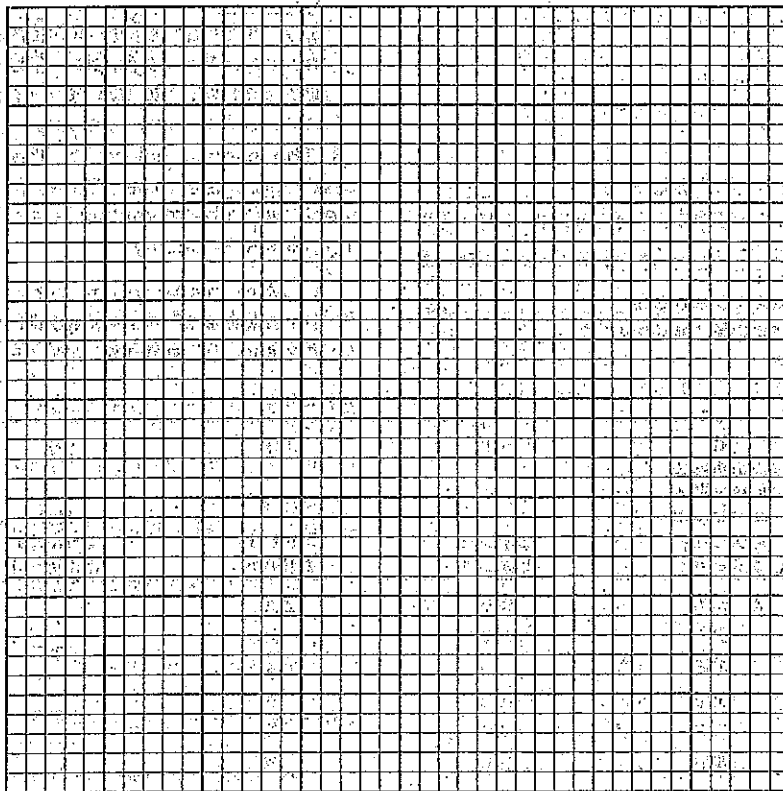
c. The equilibrium real GDP is \$ _____.

d. On the following graph, plot C_a , $C_a + I_g + X_n + G$, and the 45-degree line. Show the equilibrium real GDP.

(To answer the questions that follow, it is *not* necessary to recompute C_a , or $C_a + I_g + X_n + G$. They can be answered by using the multipliers.)

e. If taxes remained at \$100 and government purchases rose by \$10, the equilibrium real GDP would (rise, fall) _____ by \$ _____.

f. If government purchases remained at \$200 and lump-sum tax increased by \$10, the equilibrium real GDP would _____ by \$ _____.



- g. The combined effect of a \$10 increase in government purchases and a \$10 increase in taxes is (raise, lower)

_____ to real GDP by \$_____.

5. Here is a consumption schedule for a closed economy. Assume that the level of real GDP at which full employment without inflation is achieved is \$590.

Real GDP	C
\$550	\$520
560	526
570	532
580	538
590	544
600	550
610	556
620	562
630	568

- a. The value of the multiplier is _____.
- b. If planned investment is \$58, the equilibrium nominal GDP is \$_____ and exceeds full-employment real GDP by \$_____. There is a(n) _____ expenditure gap of \$_____.
- c. If planned investment is \$38, the equilibrium real GDP is \$_____ and is less than full-employment real GDP by \$_____. There is a(n) _____ expenditure gap of \$_____.

■ SHORT ANSWER AND ESSAY QUESTIONS

1. What does it mean that an economy is private and closed?
2. What assumptions are made in this chapter about production capacity, unemployment, and the price level?
3. What is the difference between an investment demand curve and an investment schedule?
4. Why is the equilibrium level of real GDP that level of real GDP at which domestic output equals aggregate expenditures? What will cause real GDP to rise if it is below this level, and what will cause it to fall if it is above this level?
5. Explain what is meant by a leakage and by an injection. Which leakage and which injection are considered in this chapter? Why is the equilibrium real GDP the real GDP at which the leakages equal the injections?
6. Why is it important to distinguish between planned and actual investment in explaining how a private, closed economy achieves its equilibrium level of real GDP?
7. Why does the equilibrium level of real GDP change?
8. How do exports and imports get included in the aggregate expenditures model?

9. What happens to the aggregate expenditures schedule when net exports increase or decrease?

10. Give some examples of international economic linkages affecting the domestic level of GDP.

11. Explain the simplifying assumptions used to include the public sector in the aggregate expenditures model.

12. Describe how government expenditures affect equilibrium GDP.

13. What effect will taxes have on the consumption schedule?

14. Explain why, with government taxing and spending, the equilibrium real GDP is the real GDP at which real GDP equals consumption plus investment plus net exports plus government purchases of goods and services.

15. Use leakages and injections to explain how changes in the different components of aggregate expenditures cause GDP to move to its equilibrium level.

16. Explain what is meant by a recessionary expenditure gap.

17. What was Keynes's solution to a recessionary gap? Explain one major limitation caution with the use the aggregate expenditures model.

18. What is an inflationary expenditure gap? Could an economy actually achieve and maintain an equilibrium real GDP that is substantially above the full-employment level of output? Explain.

19. What economic conditions contributed to the recessionary expenditure gap in the U.S. economy in 2001?

20. Why did the large negative net exports in 2007 not cause a decline in the U.S. economy below its potential and substantial unemployment?

ANSWERS

Chapter 28 The Aggregate Expenditures Model

FILL-IN QUESTIONS

1. decrease, increase
2. a closed, private, income, increase
3. investment, investment
4. equal to, equal to, 45-degree
5. a withdrawal from, an addition to, saving, investment
6. less than, decreases, rise
7. greater than, increases, fall
8. equal to, zero
9. increase, an increase, an increase
10. increases, decreases, greater, multiplier
11. minus, plus, plus
12. a. -; b. +; c. +; d. -; e. +; f. -; g. +
13. increase, decrease
14. lump-sum
15. consume, save
16. expenditures, output, plus, plus, plus
17. investment, exports, saving, imports
18. less, increase, divided
19. fixed, increasing, decreasing
20. an inflationary, decrease

TRUE-FALSE QUESTIONS

1. T, p. 561
2. T, p. 562
3. T, p. 562
4. T, pp. 564–565
5. T, p. 564
6. F, p. 564
7. F, p. 566
8. T, pp. 566–567
9. T, pp. 566–567
10. T, p. 567
11. F, p. 567
12. T, p. 567
13. F, p. 568
14. T, pp. 569–570
15. T, p. 570
16. F, p. 570
17. F, p. 571
18. T, pp. 572–573
19. T, pp. 573–574
20. T, p. 574
21. F, p. 574
22. F, p. 575
23. T, p. 575
24. F, pp. 575–576
25. T, pp. 576–577

MULTIPLE-CHOICE QUESTIONS

1. b, p. 561
2. c, p. 562
3. c, pp. 562–563
4. b, pp. 564–565
5. d, p. 565
6. a, p. 566
7. c, pp. 566–567
8. c, pp. 566–567
9. b, pp. 566–567
10. c, pp. 562–564
11. b, pp. 562–564
12. a, p. 570
13. b, pp. 569–570
14. c, pp. 569–570
15. a, pp. 569–570
16. d, pp. 570–571
17. d, p. 571
18. c, pp. 563–564
19. c, pp. 571–572
20. c, p. 575
21. b, p. 575
22. c, p. 575
23. c, p. 575
24. a, pp. 576–577
25. c, pp. 575–576

PROBLEMS

1. a. investment; b. constant (given); c. (1) unrelated, directly related; d. decrease, downward
2. a. I_g : 22, 22, 22, 22, 22, 22, 22; $C + I_g$: 1,328, 1,336, 1,352, 1,360, 1,368, 1,376; UI : -8, -6, -4, -2, 0, +2; b. 1,360; c. 0.8, 0.2; d. 5; e. increase, 3, increase, 15; f. decrease, 4, decrease, 20; g. graph similar to Figure 11.2 in text.
3. a. \$4 (and put \$4 in each of the seven net exports in the table); b. \$780, 820, 860, 900, 940, 980, 1,020; c. d. 5; e. (1) increase, \$50, (2) decrease, \$50
4. a. 0.9, 90, C_a : 1,160, 1,250, 1,340, 1,430, 1,520, 1,610, b. $C_a + I_g + X_n + G$: 1510, 1600, 1690, 1780, 1870, 1960, c. 1600; d. plot graph; e. rise, 100; f. fall, 90; g. raise, 10
5. a. 2.5; b. 620, 30, inflationary, 12; c. 570, 20; recessionary

SHORT ANSWER AND ESSAY QUESTIONS

1. p. 562
2. p. 562
3. pp. 562–563
4. pp. 563–564
5. pp. 566–567
6. pp. 566–567
7. p. 567
8. pp. 568–570
9. pp. 568–570
10. pp. 570–571
11. p. 571
12. pp. 571–572
13. pp. 572–573
14. pp. 572–573
15. p. 574
16. p. 575
17. p. 575
18. pp. 576–577
19. p. 577
20. pp. 577–578